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Reduction of ejecta from asperities on a metal surface upon shock breakout WILLIAM GEORGES, JASON LOISEAU, ANDREW HIGGINS, McGill Univ, TROY TYLER, JOERG ZIMMERMANN, General Fusion — Ejecta can be produced when a shock breaks out of a metallic surface with imperfections. The amount of material ejected depends on the strength of the shock and the surface roughness. This work focuses on the differences between square wave and Taylor wave loading, as well as examining techniques to reduce the amount of ejecta produced. In the case of square wave loading, an explosively driven flyer was launched onto an aluminum target featuring machined V-grooves on its surface. The velocity of ejecta launched into vacuum was monitored by photon Doppler velocimetry (PDV). The Taylor wave was produced by detonating a high explosive next to the aluminum target and the ejecta again monitored with PDV. To attempt to suppress the ejecta, the shock breakout pressure was reduced by the addition of an air gap. A nearly shock-less compression was also achieved by evacuating the space between the explosive and the target.

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